Voices for SSL Efficiency:
Opportunities to Partner and Participate
July 16-17, 2007 ■ Boston, MA

DETAILED CASE STUDY FOR BREAKOUT SESSIONS

Commercial Office OLED Ceiling Lighting Fixture

A core activity of the DOE SSL Market Introduction Workshop will explore case studies based on five hypothetical SSL products intended for various market applications. Workshop attendees will participate in one of the five case study breakout sessions.

This exercise is a vehicle for determining how DOE commercialization plan elements will best support the market introduction needs of new SSL products. It will serve to identify major stakeholders and the elements of the DOE programs where their participation will be most valuable. And it will provide valuable feedback to improve the design of DOE programs.

The Assignment

Each breakout group will consider one case study, working together to:

- Outline a general strategy to sell their target product, identifying issues that are particularly important for that product, such as barriers to overcome, critical information needs, involvement of critical trade allies, etc.
- Consider which elements of the DOE commercialization programs can best support their strategy and how. Could there be improvements?

The case studies include a lot of questions, provided to help you think about the issues. Some may apply, and some may not. The group doesn't need to address all the questions, but should address the questions and issues that are most important for this case study.

Case Study Structure

Each case study includes:

- An Introduction that identifies the product and places it within its intended market segment, outlining competitive advantages and disadvantages.
- The Product Description offers additional detail on performance.
- Pricing further defines the market served.
- Other Considerations are things the group may want to think about specific to this product.

Please note: The case study products are ***hypothetical*** products with ***plausible*** performance parameters (or that's the intention). In many cases, they would be technically challenging to produce today, but that doesn't matter for this exercise. Don't worry too much about the performance or market numbers, or spend time re-designing the product. This information is provided in the case studies only to help you understand the issues related to this product.

SSL Market Introduction Workshop
Breakout Case Study #2

Commercial Office OLED Ceiling Lighting Fixture

Introduction: The target product is an OLED ceiling lighting fixture intended to provide general illumination for commercial office space. A technology breakthrough funded through the DOE Solid-State Lighting R&D program has made possible the inexpensive production of a high-brightness OLED "tape" light source. While we have traditionally thought of OLEDs as panel lights, the tape configuration minimizes the use of relatively expensive OLED material, while still providing a flexible design platform for broad area lighting. This breakthrough, while significantly improving the competitiveness of the OLED technology, has not yet made it a clear economic winner. The offered OLED luminaire significantly outperforms traditional fluorescent lights with regard to energy, making it very attractive in that regard, but is still only marginally cost effective on the basis of energy savings alone. Both non-energy benefits and energy-related economic incentives will therefore importantly affect your ability to sell this product.

Product Description: This product is aimed squarely at replacing the typical 2x4-foot lighting fixture widely used in office building lighting with strip lighting that can either be incorporated into a panel-like fixture or perhaps a suspended fixture, or could be deployed in imaginative ways about which we can only speculate. Color rendition is excellent, with an index approaching 90, superior to fluorescents. The light source and associated driver are built into a relatively simple fixture; neither source nor driver is replaceable. The useful light delivered from the OLED ceiling lighting fixture is 2400 lumens and it consumes 28W of power (a *luminaire* efficacy of 85 LPW). Although a conventional T8 fluorescent tube is often quoted as having the same 85LPW efficacy, the ballast (fluorescent driver) and the fixture reduce the luminaire efficacy to about 60 LPW. So the new product actually has a 40% energy-savings advantage (85 LPW vs. 60 LPW). The new breakthrough OLED tape-light source lasts the life of the product, which is expected to be about 15 years. This lifetime is comparable to a fluorescent ballast, and much better than the fluorescent tube that requires replacement every 2 years or so.

Pricing: The average single tube commercial-grade fluorescent fixture, including the ballast, costs approximately $40. The lamp cost is a modest $1-2 each but the replacement of them involves not only the cost of the tube but also the cost of labor for the replacement, and the cost of hazardous waste disposal. The new-technology SSL area fixture is priced at $50, significantly above the first cost of the incumbent product, even including the lamp replacement costs over the lifetime. In addition to energy savings, the manufacturer is counting on the better color, labor savings, disposal savings, and the attractive design to justify this cost premium.

Other considerations: Commercial lighting purchasers are more sophisticated than residential consumers, but are still very much focused on the bottom line and usually only willing to consider a two-year payback period or less They are, however, increasingly sensitive to energy savings and will take that into account when considering the economics. Decision-makers are also very concerned about the acceptance of any new lighting technology by the building occupants, and are risk-averse in this respect. Being unfamiliar with actual maintenance requirements, the visual appearance of the light, and so forth, they may resist change. Will they achieve the advertised energy savings? There is also the issue of reliability. What assurance do buyers have that the new lights will last as long as manufacturers say they will?

The Market: Twenty-five percent of the U.S. annual energy consumption for lighting is consumed in large and small offices. And 80% or more of delivered light in these buildings is provided by fluorescent luminaires of the type addressed by this product. From an energy efficiency perspective this is an important market. Your company's research has identified a target market comprising 20-25 million new units annually. Presently there are additional annual lighting sales of about 300 million fluorescent tubes. This bulb replacement market would largely be supplanted by an OLED light of this sort, which could have an adverse effect on relations with certain distributors. And, these types of fixtures are mostly sold through large distributors, with few exceptions.

Assignment

Your Job: Your assignment is to design a marketing strategy for this product. Your company, a major manufacturer of commercial lighting fixtures, has many years of experience with traditional lighting and many relationships along the value chain, but this is your first SSL product. Fortunately you are addressing a highly motivated market. Both economic and environmental factors are beginning to have stronger influence on buying decisions, with several large corporations beginning to undertake serious energy savings programs. DOE has developed a plan that will involve many public organizations such as government agencies, utility companies, state energy efficiency organizations, industry organizations, and others. They have begun important educational, technical support, and standardization activities intended to accelerate market development. Most activities, however, are not directed at any particular market segment or product type. The main purpose of this part of your market development process is to determine how you can most effectively use these programs to achieve your goals. What changes, if any, might improve these programs to better support the needs of your product and market?

The Task, Part I: Frame the general outlines of the marketing strategy.

- Where are the weaknesses in the incumbent products that can provide new opportunity? How can you exploit them? What are the key competitive barriers to success? What are the technological barriers to success?
- How can you best exploit the energy savings inherent in this product to foster market acceptance?
- What has to happen for a successful market introduction of an energy-efficient OLED ceiling lighting fixture in this segment? Indeed, what is "success"? What might be some useful unit sales goals for the first year or two?
- What other segments of the commercial or industrial marketplace might be also appropriate for this product? What market actions or product changes would make it more useful in or acceptable to these other segments?
- Buyers for large offices have to consider many factors and are risk-averse. What behaviors will need to change in order to achieve success? What are the barriers to these changes? How can you address them? How can government testing or educational programs assist you?
- What sort of issues do you expect to encounter with your distributors? Will you need to develop new sales channels, and if so, what would they be? How will you deal with your traditional sales?
- Is there likely to be a "maintenance issue" for the new technology, given that the entire fixture must be replaced at end of life? Is it important to the marketing of this product?

The Task, Part II: Identify the roles of the government and non-government agencies and organizations.

- In the table below are listed some potential market-assisting activities that many public and industry organizations may be willing to support. Which do you think would be most useful? How would you apply these activities to your overall plan?
- Which activities are not useful for this particular product? Why? Could they be improved?
- What other elements would you add to this list?
- You have heard about the commercialization activities at the DOE. How can the DOE best make a contribution to your market strategy?
- What other groups will be most important to engage to achieve success? With which aspects of your strategies can they most usefully assist?

General Comments and Advice:

- Your team has limited time to put together a solution to this assignment. For best results (and most useful for this workshop) spend only a portion of the first day's breakout session on Part I and do some brainstorming on Part II. Use the second day breakout to complete your evaluation to tidy up your presentation.
- Obviously, this is a very speculative product, given the state of the art of OLED technology today. The trade-offs in cost, brightness, and lifetime are difficult; we have simply postulated that the problems have been solved, as indeed we expect they will be. Don't spend a lot of time debating the numbers in the case study. The idea is to give you something concrete to work with, not to give you a review of the lighting market or for you to design a specific product.
- Give your product a name. Make it sell!

Campaign elements	Stakeholders and roles*	How could you use this element for this product?
Buyer Guidance		
a) ENERGY STAR® Criteria		
b) Design/Purchasing Guidance		
Design Competitions		
a) Lighting for Tomorrow (Residential Fixtures)		
b) Commercial Fixtures Competition		
c) Lighting Design Competition for Exterior & Interior Spaces		
d) State-of-the-Art LED Luminaire Showcase		
Technology Demonstrations/Procurements		
a) Demonstrations of Market Readiness		
b) Demonstrations to Test Field Performance		
Commercial Product Testing		
a) Commercial Product Testing Program		
Technical Information		
a) Information Development and Dissemination		
b) Technical Information Network		
Standards and Test Procedures		
a) Standards/Testing Procedure Development Support		
Coordination/Leadership		
a) Facilitating and Coordinating Local and Regional Efforts		
b) Federal Government Leadership		
Other		

* Stakeholders: Standards organizations, manufacturers, industry associations, commercial lighting distributors, residential lighting showrooms, retailers, ESCOs, EEPs, utilities, state energy efficiency programs, large purchasers, energy efficiency advocates, others…